

REMARKS

Applicant respectfully requests reconsideration. Claims 1, 2, 5-9, 11-17, 19-34, 68, 91 and 125-130 were previously pending in this application. By this amendment, Applicant is canceling claim 8 without prejudice or disclaimer. Claims 1, 5, 12, 16, 19-21, 24, 34, 68, 91 and 125-130 have been amended. Support for the amendment can be found in the written description at least on page 1, line 24-26 and page 2, line 19-21. As a result, claims 1, 2, 5, 7-9, 11-17, 19-34, 68, 91 and 125-130 are pending for examination with claims 1, 68, 91, 125, 126, 129 and 130 being independent claims. No new matter has been added.

Rejections under 35 U.S.C. §112

Claims 1, 2, 5-9, 11-17, 19-34, 68, 91 and 125-130 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

According to the Examiner, there is insufficient antecedent basis for the term “the polymer” in claims 1, 2, 5-9, 11-17, 19-34, 68, 91 and 125-130.

Applicant has amended claims 1, 2, 5, 12, 16, 19-21, 24, 34, 68, 91, and 125-130 and replaced the term “polymer”, with “nucleic acid polymer” or “nucleic acid molecule” (claim 68), for which there is antecedent basis. In addition, claim 8 has been canceled. Claims 6, 7, 9, 11, 13-15, 17, 22, 25-33 are dependent on claim 1.

Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. §102

Claims 1, 2, 5, 6, 11, 13-15, 21-27, 31, 32, 91 and 125-130 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,965,361 to Kigawa et al.

Without conceding to the Examiner’s position and solely in the interest of expediting prosecution, Applicant has amended claims 1, 68, 91, 125, 126, 129 and 130 and introduced the limitation “wherein the nucleic acid tag molecule and the nucleic acid binding enzyme are covalently linked to each other”. Support for this amendment can be found in the written description at least on page 21, line 10-22 and claim 8 as originally filed. Claims 2, 5, 6, 11, 13-

15, 21-27, 31, 32 are dependent on claim 1, while claims 127 and 128 are dependent on claim 126.

Kigawa et al. pertains to a method for the in-situ hybridization of a probe-RecA protein complex to a double-stranded target nucleic acid in order to detect the target nucleic acid. The Examiner has interpreted the probe of Kigawa et al. as corresponding to the nucleic acid tag molecule of the instant claims and the RecA protein of Kigawa et al. as corresponding to the nucleic acid binding enzyme of the instant claims. Kigawa et al. does not teach all the limitations of the claims, as now amended. Specifically, Kigawa et al. does not teach that the nucleic acid tag molecule and the nucleic acid binding enzyme are covalently linked to each other. This limitation finds support in previously pending claim 8, now canceled, which was not rejected by the Examiner in view of Kigawa et al. Therefore, Kigawa et al. does not anticipate the claims, as now amended.

Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Claims 1, 2, 5-9, 11-13, 16, 17, 22-25, 27-31, 91 and 126-130 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,986,053 to Ecker et al.

Applicant respectfully traverses. Ecker et al. does not teach all of the limitations of the rejected claims. Specifically, Ecker does not teach contacting a nucleic acid polymer (or a nucleic acid molecule) with a conjugate comprising a nucleic acid tag molecule and a nucleic acid binding enzyme and allowing the nucleic acid binding enzyme to bind to the nucleic acid polymer non-specifically.

The claimed invention teaches a method using a conjugate comprising a nucleic acid binding enzyme and a nucleic acid polymer or molecule. According to the Examiner, Ecker et al. teaches a conjugate comprising a nucleic acid tag and a nucleic acid binding enzyme that are covalently linked (column 12, lines 9 to 24). The conjugates disclosed by Ecker et al. are PNAs coupled to peptides and proteins, including enzymes, nucleases, transcription factors and antibodies. The Examiner states that these conjugates are used according to the method of the claimed invention and refers to columns 30 and 31 of Ecker et al. However, the experiments described in columns 30 and 31 refer to transcription initiation and footprinting experiments. In the transcription experiments, a PNA is first hybridized to a double stranded nucleic acid target

and transcription is initiated by a later added RNA polymerase which binds to the PNA/DNA complex. Similarly in the footprinting experiments, the PNA is first hybridized to a double stranded nucleic acid to form a complex and this complex is subsequently bound by an RNA polymerase. The transcription initiation and footprinting experiments described by Ecker et al. are distinct from the methods of the currently claimed invention for at least two reasons. First, in the methods of the current claimed invention a nucleic acid is contacted with a conjugate comprising a nucleic acid tag molecule and a nucleic acid binding enzyme. In the experiments described by Ecker et al. the alleged nucleic acid binding enzyme (the RNA polymerase) is not conjugated to the nucleic acid tag molecule. In fact, the PNA and the polymerase are not even contacted to the target at the same time, a limitation that is implicit in the use of a conjugate as claimed. Second, the claims recite that the nucleic acid binding enzyme is allowed to bind to the nucleic acid polymer non-specifically. In the experiments described by Ecker et al. the RNA polymerase does not bind to the nucleic acid tag non-specifically. Rather the RNA polymerase binds specifically to the PNA/DNA complex. Since Ecker et al. does not teach all the elements of the rejected claims, Ecker et al. does not anticipate these claims.

Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 19, 20, 33, 34 and 68 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kigawa et al. in view of PCT Publication No. WO 00/09757 to Tegenfeldt et al.

According to the Examiner, Kigawa et al. teaches the method of claim 1. Also, according to the Examiner, Kigawa et al. does not teach detection using a single molecule linear polymer analysis system. However, according to the Examiner, Tegenfeldt et al. teaches a single molecule linear polymer analysis system. The Examiner states that it would have been obvious to a person of ordinary skill in the art to combine the teachings of Tegenfeldt et al. and Kigawa et al.

Applicant respectfully traverses. As stated above, Kigawa et al. does not teach all of the limitations of rejected claims, as now amended. Namely, Kigawa et al. does not teach a conjugate comprising a nucleic acid tag molecule covalently linked to a nucleic acid binding enzyme. Tegenfeldt et al. does not provide the missing teaching. Therefore the combination of

Kigawa et al. and Tegenfeldt et al. does not teach all the elements of the rejected claims. For at least this reason, the combination does not render the claims *prima facie* obvious.

Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Responses to Previous Arguments

Applicant acknowledges that the Examiner has withdrawn all previous objections and rejections.

CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Date: September 6, 2007
x09.06.07

Respectfully submitted,



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